This guidance is based on Adobe Acrobat 7.0 Professional. However, many of the techniques discussed in this guidance are applicable to other versions of Adobe. It is also applicable to users that only have an Adobe "reader". MicroStation can be used to print PDF even if you only have access to the Adobe "reader". Designers that don't have Adobe Professional can still do a lot to prepare for the final PDF plan creation. This preparation will help the person responsible for creating the final PDF.

Design plans may be prepared by several different people using many different applications and different files. MicroStation, Microsoft Word and Excel are the most common applications used to create plans. Creating the final PDF plans usually involves creating separate PDF files from the individual applications then combining and arranging the applications into one final PDF file. This guidance has 3 main divisions; Policies, Printing to PDF and working with Adobe Acrobat.

Policies

There are several NDDOT policies that indirectly affect the way PDF files are created. Understanding or awareness of these policies will help explain certain instructions in this manual.

Professional Engineers and Land Surveyors Seals and Electronic Distribution Statements

Most of the source applications used to create plans accommodate the required professional seals and distribution statements. MicroStation uses special levels, print drivers and pen tables. Microsoft Office documents use macros. One purpose of these accommodations is to help avoid the need for multiple versions of the same document. If multiple versions of the same document exist, the possibility for errors and omissions increase. This effort to reduce mistakes by reducing or eliminating multiple versions is one reason why this guidance may seem rigid or complex.

Standard File Names

Individual plan sheet names have been standardized for easy, quick and consistent identification. The naming convention is also used for sorting purposes. Files that are stored in one directory will have an order sequence that matches the order of sheets within the plans. The file name will help with organizing the sheets within the final plan set.

Individual pdf plan sheets should be named using the CADD standard names with a pdf extension (instead of "dgn" the extension should be "pdf").

The final pdf plan document needs to be name according to a newly developed standard. This standard was not posted in the NDDOT CADD standards at the time this manual was created. The name should use the project number followed by a space and the word "Plan". The name is important because it will be posted to an automated web site that creates a web page with links and headings based off of file names. If the names are not standard the links will not be standard.

Examples
SNH-5-12(035)034 Plan
IM-8-094(039)315 Plan

Printing to PDF

The process of creating PDF files is similar to printing to paper. Documents from various applications such as MicroStation and Microsoft Word are printed to another electronic format – Portable Document Format (PDF).

Creating PDF files from MicroStation

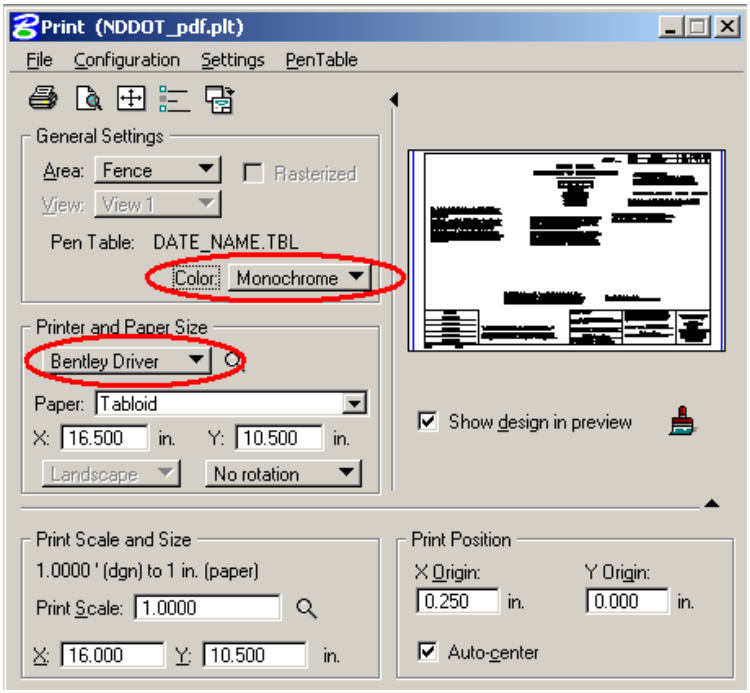
Using MicroStation to Create PDF files One at a Time

Within MicroStation

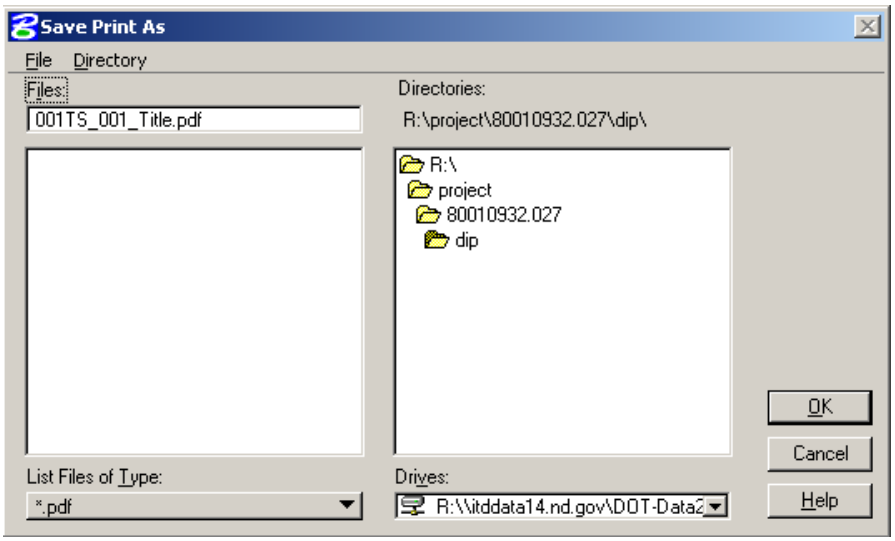
1. Place a MicroStation fence around the drawing print area. Each board sheet cell has a print area boarder. Using key point snaps to place a fence on the print area boarder will help ensure that the drawing scale is maintained.

2. Select the MicroStation print command (File>Print). Within the "Print" dialog box, select a Bentley Driver (File>Select Bentley Driver). Use the following Bentley driver "S:\STANDARD\V8\plotdrv\ NDDOT_pdf.plt".

3. Towards the middle of the dialog box there is a selection box for "Color" settings. Set it to "Monochrome". This setting will help produce a black and white pdf with good contrast. Presently, all plans posted on the NDDOT web shall be black and white. If color or grayscale drawings are printed on a black and white printer, the desired quality – contrast may not be achieved. Set the paper size to "Tabloid".



4. Select the print icon or “File>Print”. The “Save Print As” dialog should open. The file should be named using the CADD standard names. This is typically similar to the drawing (dgn) name. The only difference in the name should be the file extension. Instead of “dgn” the extension should be “pdf”. The File name is important, because it will help with organizing the sheets within the final plan set. The intermediate pdf files used to create the final pdf plan set should be stored in one directory. The standard NDDOT CADD project directory structure should be used. A sub directory under the applicable section folder should be created (example: district\sheets). Select “OK” to create the PDF file.



Creating PDF files, one at a time, using the above method can be tedious, especially if the final plans contain several sheets. Using “Batch Print” can expedite the process.

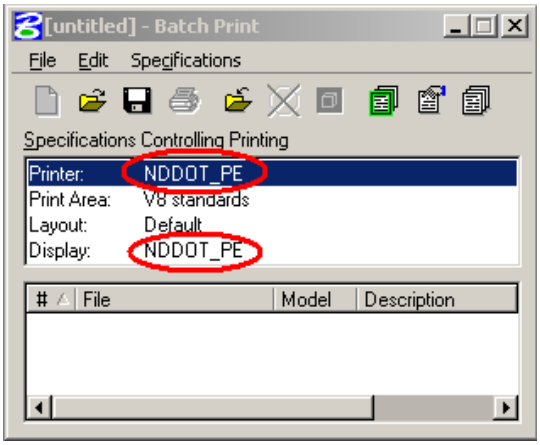
Using MicroStation "Batch Print" to Create PDF files from several MicroStation drawings (sheet cells).

Batch plotting is a utility for plotting one or more design files at a time. A single batch plot job can print drawings from multiple directories. This section only discusses the NDDOT standards set up for batch plotting.

1. Use the NDDOT standard sheet cells.
   a. The NDDOT standards for batch plotting use a plot boundary defined by a particular shape. These shapes are included in all of our sheet cells. The shape is the outer box with attributes; level = Sht Lines, color = 102, Weight = 1, Style = 1.
   b. Do not use the "Use Shared Cells" option when placing sheets. Batch Plotting will not work correctly if this option is used.

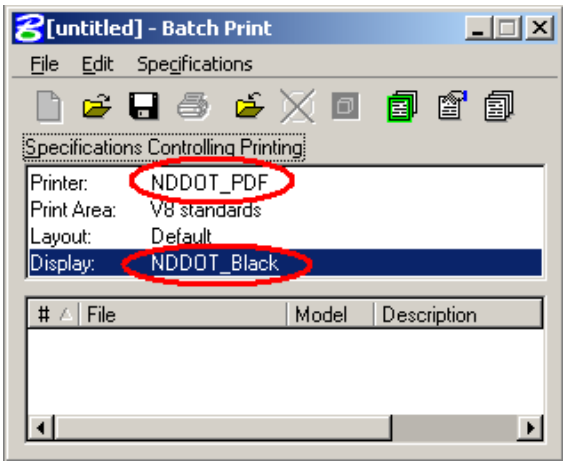
2. Invoke batch print\plot under MicroStation file commands.

   a. The MicroStation batch plot specifications should default to the NDDOT settings. You should be able to tell if the settings are correct if the Batch Plot dialog box shows printer settings starting out with "NDDOT…".

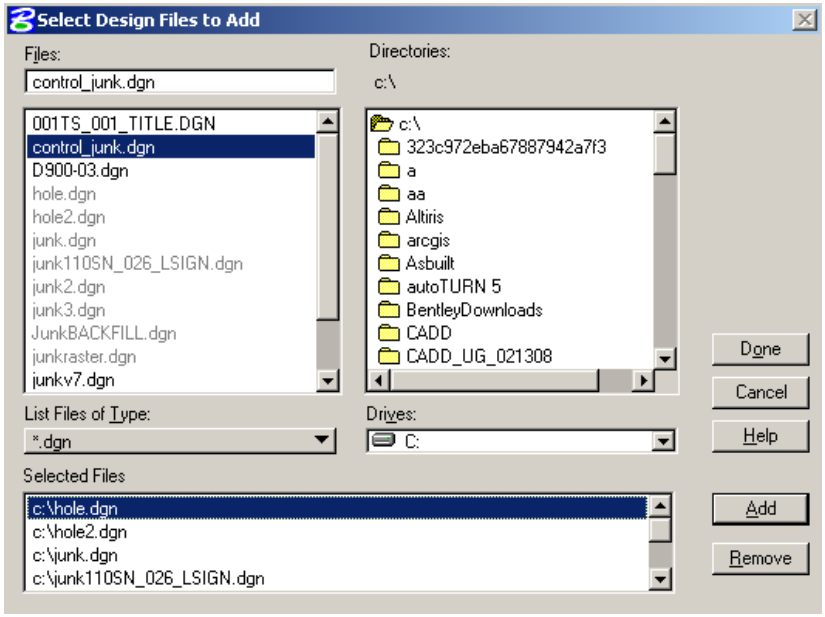


   b. If you don't get automatically get the NDDOT settings, see section 2.5 of the NDDOT CADD Standards.
   c. The batchplt.spc file is not a replacement plot driver. It is a supplemental file containing batch plot settings.

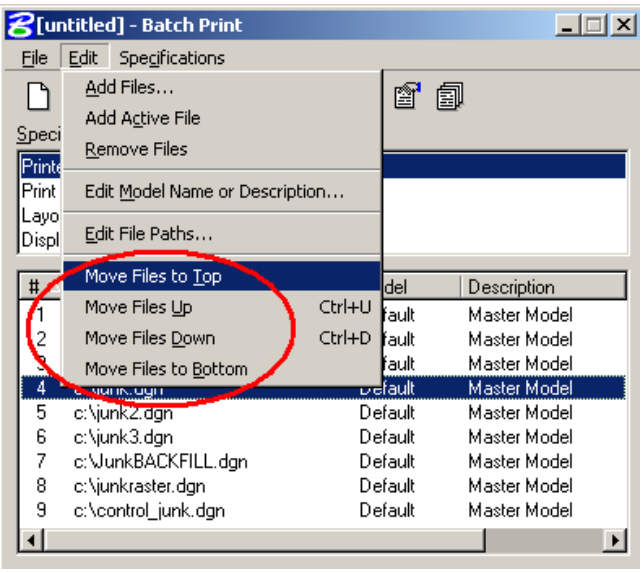
3. The default “Specifications Controlling Printing” use the “Printer” (printer settings) named “NDDOT_PE and the “Display” named “NDDOT_PE”. These settings need to be changed. Within the Batch Print dialog box, in the middle panel, double click on the word “Printer:”. The “Select Printer Specification” dialog box should open. Select the “NDDOT_PDF” specification and select “OK”. Next, double click on the work “Display:”. The “Select Display Specification” dialog box should open. Select the “NDDOT_Black” specification and select “OK”. The Batch Print dialog box should show the selected “Specifications Controlling Printing” (It should look the dialog box shown on the right).



4. Select files to batch plot under the batch plot edit commands (Edit>Add Files). The “Select Design Files to Add” dialog box should open. Select the files to batch print and use the “Add” button to include them in the “Selected Files”. Files can be in multiple directories. After files have been added, select the “Done” button.

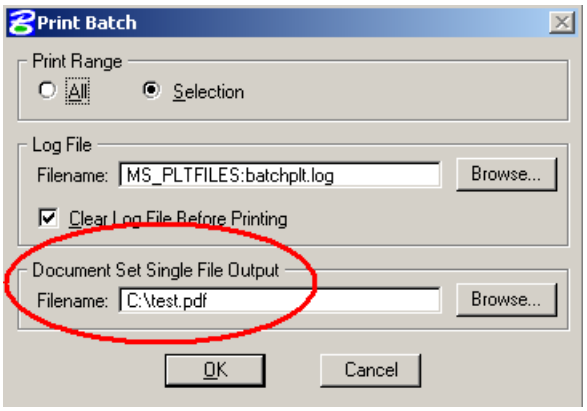


5. If your files are in multiple directories or if CADD standard names for drawings are not used, the files may need to be reordered. Select the files to reorder and use the “Move Files to Top”, “Move Files Up”, “Move files Down” and or “Move Files to Bottom” tools that are located under the “Edit” pull down menu. The order that files are shown in the “Batch Print” list will affect the sequence in which files are added to the PDF file.



6. With in the Batch Print dialog box, select or highlight all the files. If you have just one file highlighted, the Bath Print tool will only process the one selected file.

7. Within the “Batch Print” dialog box, click the “Print” button or select “File>Print”. Another dialog box should open. Change the File name and path. The standard NDDOT CADD project directory structure should be used. A sub directory under the applicable section folder should be created (example: district\sheets). Select “OK” to create the PDF file.



Creating PDF files from Microsoft Word and Excel

You can create Adobe PDF files from Microsoft Word and Excel 3 different ways;

1. Use the "Save As" command.
2. Use the Adobe PDF Printer.
3. Use the PDFMaker Tool Bar.

The "Save As" Command

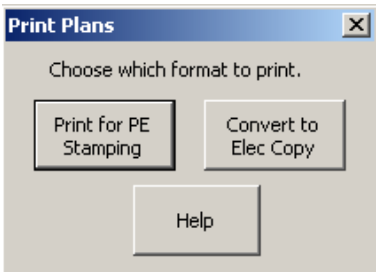
The "Save As" method is unique way to create a PDF because you don't have to have Adobe Acrobat Professional. However, Microsoft Office 2007 is required. The "Save As" command will not work in Microsoft Office XP.

Several NDDOT plan sheets developed with Microsoft office are macro intensive. Macros for incorporating professional engineer distribution statements while using the "Save As" command have not yet been developed. These plan sheets include;

1. Traffic Control Devices List (100WZ_001_TCDL.xls)
2. Design Notes (11x17 sheet) (006NT_001_notes.doc)
3. Bridge Notes (11x17 sheet) (170BR_001_notes.doc)

The NDDOT 8.5" x 11" template for district plans (District_Plan.doc) also uses a Macro for incorporating a professional engineer distribution statement. This format will work with the "Save As" method for creating PDF files. This is how you do it;

1. Confirm Microsoft Office version and settings. Office 2007 is needed and Macro Security needs to be set to "Enable all Macros". If Macro Security is set to a higher level the macros will not run. If macros don't run on your Microsoft Word;
   a. Click the Microsoft Office Button.
   b. Click "Word Options" at the bottom of the pull down menu.
   c. Click on "Trust Center".
   d. Click on Trust Center Settings.
   e. Enable all Macros.
2. Use the "Print Plans" macro. This macro is intended to launch on the opening of the document. If the macro security was just changed, you may need to close and reopen Microsoft Word or manually launch the "Launch_Printer_Box" macro.
3. Within the "Print Plans" dialog box – macro, select the "Convert to Elec Copy" and complete the prompts for the electronic distribution statement. The electronic distribution statement should be populated throughout the document.



4. Click the Microsoft Office Button and select "Save As" and then select "PDF or XPS".
5. Save the document according to the CADD Standards (Proper Name and Location).

Using PDFMaker Tool Bar

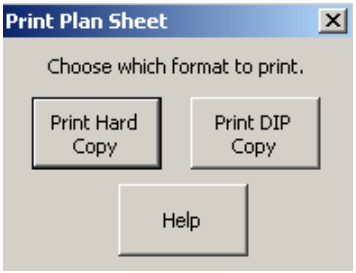
The PDFMaker tools work like the "Save As" tool. However you will need Adobe Acrobat Professional. The NDDOT Macros are not presently set up for Adobe. The Macro limitations noted with the "Save As" tool also apply to the PDFMaker tools.

If Adobe Acrobat Professional is installed on your computer, extra tools (PDFMaker) will be added to your "Word" and "Excel" applications. Within the PDFMaker tool bar or menu, select the "Convert to PDF" tool. The "Save Adobe PDF File As" dialog box will open. Save the document according to the CADD Standards (Proper Name and Location).

Using the Adobe PDF Printer

If Adobe Acrobat Professional is installed on your computer, you will have access to an "Adobe PDF" printer. If you want to create a PDF file, print your document to the "Adobe PDF" printer. The "Save PDF File As" dialog box will open. Save the document according to the CADD Standards (Proper Name and Location).

The NDDOT Macros are not presently set up for Adobe. There are macro limitations similar to limitations noted with the "Save As" tool. However these limitations can be circumvented if you have the application "Clearwater" installed on your computer. Use the "Print DIP Copy" button on the "Print Plan Sheet" dialog box. This will create a "Clearwater" version of your document. Then you can use the "Adobe PDF" printer with an electronic distribution statement.



Working within Adobe Acrobat

Adobe Acrobat can directly import Microsoft Office documents. It can not directly import MicroStation documents. MicroStation drawings need to be printed to PDF before they can be merged with other documents (see section "Creating PDF Files from MicroStation").

The common tools used to create and edit PDF plans include;

1. "Create PDF > From File"
2. "Create PDF > From Multiple Files"
3. Inserting Pages (Combining Documents)
4. Replacing Pages
5. Deleting Pages
6. Moving Pages

"Create PDF > From File"

1. In Acrobat, choose File > Create PDF > From File.
2. Select your file type from the "Files of type" menu and locate the file you want to convert to a PDF.
3. Click Open to convert the file to a PDF file.

"Create PDF > From Multiple Files"

1. In Acrobat, select "File > Create PDF > From Multiple Files". The "Create PDF form Multiple Documents" dialog box should open.
2. Click on "Browse" to locate and select files. Hold down the Ctrl (control) key to select multiple files within a directory. Hold down the shift key to select a range of files within a directory.
3. Rearrange the files in the list as needed. To move a file up or down in the file list, select the file name and click Move Up or Move Down.
4. Click OK to convert and consolidate the files into one PDF. Some source applications may start and close automatically. When the conversion is complete, the consolidated PDF file will open, and you will be prompted to save the file.

Inserting Pages (Combining Documents)

1. Select "Documents > Insert Pages" from the Acrobat pull down menu.
2. Select the document to insert.
3. An "Insert Pages" dialog box will open that allows you to specify the location to insert the pages within your active pdf document.

Replacing Pages

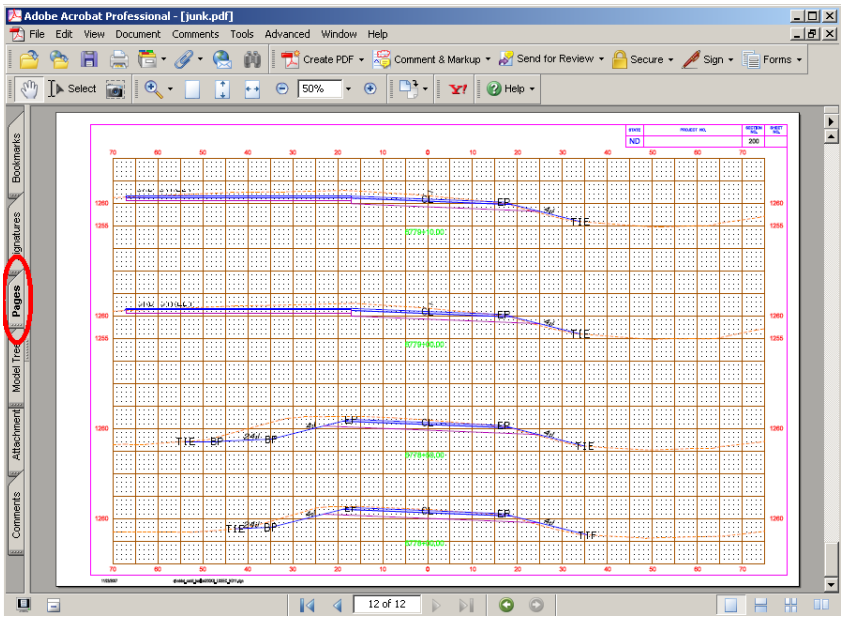
1. Select "Documents >Replace Pages" from the Acrobat pull down menu.
2. Select the document containing the replacement page.
3. A "Replace Pages" dialog box will open that allows you to specify the specific pages in the active pdf document to replace with specific replacement document pages.

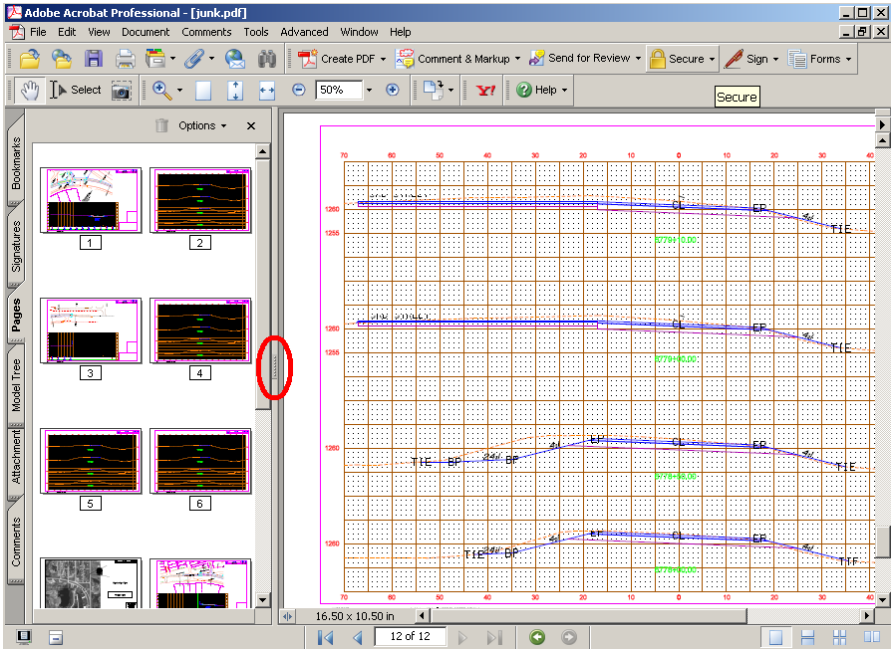
Deleting Pages

Select "Documents >Delete Pages" from the Acrobat pull down menu. The Delete Pages dialog box will open. Specify the pages to be deleted.

Moving Pages

Open the PDF with Adobe Acrobat. On the left side of the application window there are tabs. Double click on the tab named “Pages”. If the navigation panel is minimized, it will expand.





You can adjust the size of the navigation panel by dragging on the right edge of the panel.

Each page of the plans will appear as thumb nail views in the navigation panel. To move a page, drag the page thumb nail to the desired location. The pages are renumbered. A range of pages can be selected by holding down on the shift key as the first page and last page of the range are selected. The range of pages can be dragged to the desired location.

Printing PDF Tip

Most drawings have been made so that they print at a specific scale. Users need to be careful not to let your individual pdf reader settings or the printer settings adjust this scale. Most adobe – pdf readers and some printers do this by default. The scaling settings need to be turned off – set to "None". On some printers such as Design's Xerox 4525 printers (black and white), the "edge to edge" setting needs to be enable under the advanced settings.

There are several different versions of pdf readers, hundreds of different printer models, and a very diverse group of users that are going to print plan sets. This is going to be an awareness issue. Learn the settings for your situation needed to print a set of plans to scale.